

CLAIMS

1. Process for the production of a food product involving at least one heating step, comprising adding one or more enzymes to an intermediate form of said food product in said production process whereby the enzyme is added prior to said heating step in an amount that is effective in reducing the level of amino acids that are present in said intermediate form of said food product which amino acids are involved in the formation of acrylamide during said heating step.
2. Process according to claim 1 wherein the food product is made from at least one plant raw material.
3. Process according to claim 2 wherein the plant raw material is cereal flour, preferably wheat flour or potato.
4. Process according to anyone of the preceding claims wherein the enzyme is capable of modifying the side chain of amino acids that are involved in the formation of acrylamide during the heating step of the production process and whereby the degradation products of said amino acids are not, or at least to a lesser extent, giving rise to the formation of acrylamide in comparison with the unmodified form of the amino acid.
5. Process according to claim 4 wherein the enzyme is modifying the side chain of at least one of the amino acids asparagine, glutamine, cysteine, methionine, proline, serine, phenylalanine, tyrosine and/or tryptophane.
6. Process according to any of the preceding claims wherein the enzyme is added as an enzyme preparation or produced in situ by a microorganism capable of producing said enzyme.
7. Process according to claim 7 wherein the enzyme preparation is derived from a microorganism.

8. Process according to claim 7 wherein the microorganism is a bacterium, a fungus or a yeast.
- 5 9. Process according to any of the preceding claims wherein the enzyme is asparaginase (EC 3.5.1.1) or glutaminase (EC 3.4.1.2).
- 10 10. An isolated polynucleotide hybridisable to a polynucleotide of SEQ ID NO: 1.
11. An isolated polynucleotide according to claim 10 hybridisable under high stringency conditions to a polynucleotide of SEQ ID NO: 1.
12. An isolated polynucleotide according to claims 10 or 11 obtainable from a filamentous fungus.
- 15 13. An isolated polynucleotide according to claim 12 obtainable from *Aspergillus niger*.
14. An isolated polynucleotide encoding an asparaginase comprising an amino acid sequence SEQ ID NO: 3 or functional equivalents thereof.
- 20 15. An isolated polynucleotide encoding at least one functional domain of an asparaginase comprising an amino acid sequence SEQ ID NO: 3 or functional equivalents thereof.
- 25 16. An isolated polynucleotide comprising a nucleotide sequence SEQ ID NO: 1 or functional equivalents thereof.
17. An isolated polynucleotide consisting of SEQ ID NO: 1.
- 30 18. A vector comprising a polynucleotide sequence according to claims 10 to 17.
19. A vector according to claim 18 wherein said polynucleotide sequence according to claims 10 to 17 is operatively linked with regulatory sequences suitable for

expression of said polynucleotide sequence in a suitable host cell.

20. A vector according to claim 19 wherein said suitable host cell is a filamentous fungus.
- 5 21. A method for manufacturing a polynucleotide according to any one of claims 10 - 17 or a vector according to any one of claims 18 - 20 comprising the steps of culturing a host cell transformed with said polynucleotide or said vector and isolating said polynucleotide or said vector from said host cell.
- 10 22. An isolated asparaginase with an amino acid sequence SEQ ID NO: 3 or functional equivalents thereof.
23. An isolated asparaginase according to claim 22 obtainable from *Aspergillus niger*.
- 15 24. An isolated asparaginase obtainable by expressing a polynucleotide according to any one of claims 10 - 17 or a vector according to claims 18 - 20 in an appropriate host cell, e.g. *Aspergillus niger*.
- 20 25. Recombinant asparaginase comprising a functional domain of any of the asparaginase according to any one of claims 22 - 24.
- 25 26. A method for manufacturing an asparaginase according to anyone of claims 22 - 25 comprising the steps of transforming a suitable host cell with an isolated polynucleotide according to any one of claims 10 - 17 or a vector according to any one of claims 18 - 20, culturing said cell under conditions allowing expression of said polynucleotide and optionally purifying the encoded polypeptide from said cell or culture medium.
- 30 27. A recombinant host cell comprising a polynucleotide according to any one of claims 10 - 17 or a vector according to any one of claims 18 - 20.
28. A recombinant host cell expressing a polypeptide according to any one of claims

22 - 25.

29. Use of an asparaginase according to any one of claims 22-25 in a process for the production of a food product according to any one of claims 1 – 9.

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30. A food product obtainable by the process according to any one of claims 1 - 9 or claim 29.

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